The Center

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The Center is a quarterly newsletter compiled by WRRC to alert potential partners of technology transfer opportunities.

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WRRC Welcomes a New Director

On November 23, the Center welcomed the new Center Director, James N. Seiber. Jim comes to us from the University of Nevada where he served as the Director for the Center of Environmental Sciences and Engineering and as the Sierra Pacific Professor of Environmental Sciences. Jim earned his Ph.D. in organic chemistry at Utah State University. He initially worked for Dow Chemical Company and then joined the faculty of the University of California, Davis, subsequently serving as the Chair of the Department of Environmental Toxicology and Associate Dean for Research at the College of Agricultural and Environmental Sciences.

At Nevada, Jim developed an innovative program of industry-university partnerships. As part of a larger, University-wide Applied Research Initiative, Jim helped develop several partnerships in which the corporate partners worked on campus with funding from both Corporate and Nevada state sources. The partnership program targeted smaller companies in the state which had product or process ideas but lacked the R&D capacity to develop the ideas. Examples included microbial processing for recovering of precious metals from refractory ore; *in vitro* simulation of membrane absorption of candidate pharmaceuticals; recovery of pulp and production of biogas from municipal solid wastes; and electrochemical mediated oxidation to destroy waste solvents. Jim also worked closely with Sierra Pacific Power Company to develop scholarship and seminar programs with broad campus and community impacts.

Jim has a strong interest in enhancing the technology transfer program at WRRC and in developing partnerships with producers, processors and other industry groups. The Office of Technology Transfer will be working closely with Jim over the coming months to communicate the strengths of the WRRC program, the existing technologies developed at the Center which are ripe for commercialization, as well as opportunities for future partnerships. He is looking forward to meeting many of our current or prospective partners. Please feel free to contact him and arrange to come to the Center and meet him in person.

WRRC Patent Activity

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U.S. Patents Issued:

July 7, 1998, No. 5,776,476
Stable Germicidal Film-Forming Teat-Dip Solutions
Inventors: F. M. Pallos, T. C. Hemling, D. W. S. Wong, A. Pavlath

December 22, 1998; No. 5,851,301
Method for Separation of Wheat Flour into Protein and Starch Fractions
Inventors: G. H. Robertson, T. K. Cao

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U.S. Patents Allowed:

November 9, 1998; Serial No. 08/857,348
Starch-Based Microcellular Foams
Inventors: G. M. Glenn, D. Stern

November 10, 1998; Serial No. 08/897,659
Glutenin Genes and Their Uses
Inventors: A. Blechl, O. Anderson, H. Rines, D. Somers, K. Torbert

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U.S. Patent Applications Filed:

December 3, 1998; Serial No. 09/204,864
Determination of Concentration of a Compound in a Multiple Component Fluid
Inventors: L. S. Tsai, B. J. Hernlem, C. C. Huxsoll

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How Do Businesses Get Access to These Technologies

WRRC is seeking private companies interested in licensing technologies which have been patented or for which a patent application has been filed. We are also looking for companies interested in becoming our partners in Cooperative Research and Development Agreements (CRADAs). CRADA partners have the first right to negotiate an exclusive license for each invention which is made as part of the CRADA. We encourage small and minority-owned business to take part in our technology transfer programs.

Undersecretary Gonzalez Signs New CRADA with Artlo Industries, Inc. to Utilize Wheat Starch in Developing Light-Weight Concrete Products

On October 20, 1998, I. Miley Gonzalez, Undersecretary, Research, Education, and Economics, signed a Cooperative Research and Development Agreement (CRADA) with Artlo Industries, Inc. of Perris, California to research the use of wheat starch to develop lightweight concrete products. The market for lightweight concrete is well established in the United States and overseas. Although lightweight concrete is generally not as strong as conventional concrete, it is preferred for a variety of uses, because of its lower weight and its superior insulative properties. It may be used as a fire resistant insulation around fireplaces, for roof tiles, on insulated pool decks, and to make landscape furnishings, building panels, and architectural ornaments.

The CRADA is based on the WRRC discovery of a new and innovative method of utilizing wheat starch for making lightweight concrete products. The method involves making starch aquagels which are semi-rigid gels that contain mostly water and a small amount of starch that acts as the gelling agent. The aquagels are mixed in the concrete mixture until they become uniformly dispersed. During the curing and drying process, the moisture within the aquagels migrates to the surface and evaporates, leaving behind small air bubbles, each encasing a minute quantity of starch. The result is a lightweight concrete product with uniformly dispersed air bubbles. This type of lightweight concrete appears to have superior insulating properties and may be able to be used to precast large objects because of the uniform spacing of the air bubbles. It also has an attractive texture and surface appearance.

The CRADA with Artlo will test this process under real-world conditions and help determine if the starch-containing concrete can stand up to the stresses and wear and tear of outdoor environments. Artlo Industries Inc. brings to the cooperative project over forty five years of experience in the precast concrete industry. Located near Riverside, they are a Hispanic-owned small business which is a leading manufacturer of landscape furnishings, architectural ornaments and building panels.

Artlo has recently entered into a partnership with Heartland Wheat Growers, a manufacturer of wheat starch, wheat gluten and derivative products located in Russell, Kansas. Heartland will work with ARS and Artlo. Heartland's focus will be on improving methods for the commercial production of starch aquagels from wheat.

CRADA Opportunity: Bio-Based Disposable Containers Containing Wheat Starch

The starch group at WRRC is also researching the potential for making containers for the fast food industry from wheat starch. Disposable containers containing potato starch, water, and cellulose fiber are currently being developed by the private sector. The cost of these containers could be substantially reduced if they were made from a starch that was less expensive such as wheat starch. Researchers at WRRC have developed formulations containing wheat starch that can be molded using a wafer process into lightweight, foam panels. The panels are white in color and have densities in the range of 0.09 cc to 0.18 cc. These results indicate that low-density foam panels with high tensile strength can be made using wheat starch in place of potato starch. The next phase of the research will involve applying various coatings to the starch-based panels and testing to determine their effect on water vapor permeability. The Washington, Oregon and Idaho Wheat Commissions provided seed money for this project. WRRC is seeking a commercial partner with expertise in bio-based packaging to join us in research and development.

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